

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

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31. AUG 2005

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing

(day/month/year)

29.08.2005

Applicant's or agent's file reference

WP/4006.WOP/P134

IMPORTANT NOTIFICATION

International application No.

PCT/GB2004/003321

International filing date (day/month/year)

02.08.2004

Priority date (day/month/year)

06.08.2003

Applicant

WILLETT INTERNATIONAL LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



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PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WP/4006.WOP/P134	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/GB2004/003321	International filing date (day/month/year) 02.08.2004	Priority date (day/month/year) 06.08.2003
International Patent Classification (IPC) or national classification and IPC B41J29/377		
Applicant WILLETT INTERNATIONAL LIMITED et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 3 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand 21.06.2005	Date of completion of this report 29.08.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Brännström, S Telephone No. +49 89 2399-6036 	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

10/567546
International application No.
PCT/GB2004/003321

IAP20 RECEIVED/PTO 06 FEB 2006

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-7 as originally filed

Claims, Numbers

1-9 filed with telefax on 21.06.2005

Drawings, Sheets

1/2, 2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/003321

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-9
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/GB2004/003321

IAP20 Rec'd PCT/PTO 06 FEB 2006

Re Item V

**Reasoned statement with regard to inventive step; citations and explanations
supporting such statement**

1. Reference is made to the following documents:
D1: EP-A-0317341
D2: JP-A-02069280
2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of independent claims 1 and 5 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claims 1 and 5, and discloses (the references in parentheses applying to this document):

A method of regulating the temperature of a print head comprising one or more print elements,

the method comprising the step of, whilst the print head is printing (col.9, l.29-41), using a temperature control medium to regulate the temperature of one or more of the print elements (col.8, l.29-64),

wherein the temperature control medium is pumped from a storage means (tank 37) to the one or more print elements (col.8, l.50-64),

wherein the temperature control medium is cooled by a temperature control means (col.9, l.18-25), and

wherein the temperature control medium is also a print medium (recording liquid).

The subject-matter of claim 1 differs from this known method in that the temperature control means is associated with the storage means to regulate the temperature of the temperature control medium held in the storage means. Document D1 does not specify where the temperature control means (a fan) is positioned, it merely states that "it is possible to provide a fan ... to cool the recording liquid being circulated" (col.9, l.23-25). According to this statement, the temperature control means (the fan)

could be placed anywhere along the flow path of the temperature control medium (the recording liquid), including at the storage means (the tank 37). To position the temperature control means at the storage means, thereby associating the temperature control means with the storage tank, is, in view of the disclosure of D1, a mere design option without inventive merit, especially since no technical effect seems to be associated with said position.

The subject-matter of claim 1 of the present application cannot therefore not be considered as involving an inventive step (Article 33(3) PCT).

The same reasoning applies, *mutatis mutandis*, to the subject-matter of independent claim 5 which defines a print head corresponding to the method of claim 1. The subject-matter of claim 5 is therefore also not inventive.

3. Dependent claims 2-4 and 6-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, see documents D1 (col.7, l.31 - col.9, l.41 and fig.3C) and D2 (PAJ abstract and fig.3).

AP20 Res IPCT/PTO 06 FEB 2006
CLAIMS

1. A method of regulating the temperature of a print head comprising one or more print elements, the method comprising the step of, whilst the print head is printing, using a temperature control medium to regulate the temperature of one or more of the print elements, wherein the temperature control medium is pumped from a storage means to the one or more print elements, wherein the temperature control medium held in the storage means is heated or cooled by a temperature control means associated with the storage means, wherein the temperature control medium is also a print medium.

2. A method according to claim 1, wherein the temperature control medium is pumped from the one or more print elements back to the storage means.

3. A method according to claim 2, wherein the temperature of the print head is regulated based on the temperature difference between the temperature control medium pumped from the storage means to the one or more print elements and the temperature control medium pumped from the one or more print elements back to the storage means.

4. A method according to claim 1 or claim 2 or claim 3, wherein the temperature control medium is an ink.

5. A print head comprising: one or more print

elements; temperature control medium storage means, the storage means being in fluid communication with the one or more print elements such that, in use, and whilst the print head is printing, the temperature control medium
5 can circulate from the storage means to the one or more print elements and thence to the storage means, wherein the print head further comprises temperature control means associated with the storage means that, in use, heats or cools the temperature control medium held in
10 the storage means, wherein the temperature control medium is also a print medium.

6. A print head according to claim 5, further comprising a first conduit for providing fluid
15 communication from the storage means to the printing elements and a second conduit for providing fluid communication from the printing elements to the storage means.

20 7. A print head according to claim 5 or claim 6, wherein the print head comprises one or more temperature sensors.

25 8. A print head according to claim 7, wherein one or more temperature sensors are arranged to measure the temperature of one or more print elements.

30 9. A print head according to claim 7 or claim 8, when dependent on claim 6, wherein one or more temperature sensors are arranged to measure the temperature of the temperature control medium in the

first conduit and/or the second conduit.